



COLLECTION
PRO-AGRO

Rearing grasscutters

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Intervenants

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General information

Grasscutters (*Thryonomys swinderianus*) are rodents widely found in grasslands, clearings, wet or marshy areas in Africa. They are more commonly known as “hedgehogs” in Central Africa, “agouti” in French-speaking West Africa, and “cane rats” in English-speaking West Africa.

Although widely hunted, grasscutters can also be domesticated. They are placid animals and relatively prolific, becoming sexually mature and able to reproduce at around five to six months, and producing litters of up to twelve young. Because they are easy to rear, their production offers an alternative to poaching bushmeat. Grasscutters can grow quickly in intensive conditions, and their meat is high in protein and value.

1

HOUSING

1.1 Conditions for breeding

In intensive production, grasscutters should be kept in cages or pens inside a secure shed. The location of the shed is critical for successful rearing.

The area should be easily accessible, in a flood-free zone, removed from noise, well aired and ventilated, with feed and a water source, as well as being secure. The size of the building will depend on the number of grasscutters kept and production objectives. By way of example, the space required for a group of reproductive grasscutters comprising one adult male and four females is 1.6 to 2 m².

1.2 Materials for the rearing shed

Different types of material are used in the construction of the rearing shed, including bricks or breezeblocks, bamboo, straw and matting. The key is to use local materials in order to keep down construction costs.

The building should be ventilated and offer enough light to facilitate rearing activities. The long sides of the structure are made of a low wall 1.5 m high, with the upper half covered with chicken wire. The roof can be made out of corrugated iron, straw or any other kind of waterproof material.

1.3 Materials for the rearing pens

Rearing pen

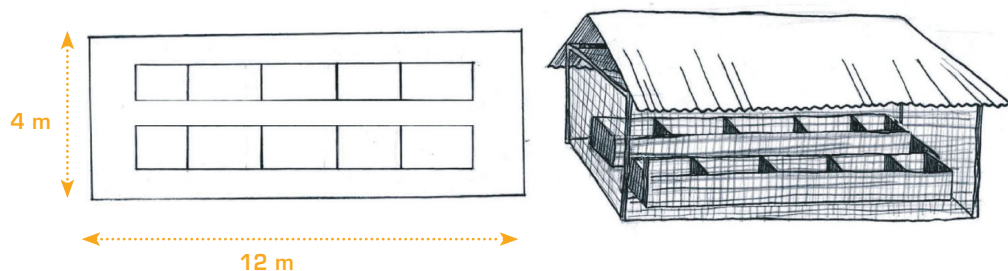
The grasscutters are kept in pens inside the rearing shed. The number of pens depends on the production objectives. It is recommended to have one breeding female per pen. The recommended surface area per adult animal in the pen is 0.2 m².

One possible setup could include:

- A pen for fattening young grasscutters;
- A pen for adults;
- A pen for mating;
- A pen for giving birth and feeding the young.

The layout of the pens depends on the type of material used in their construction. Metal pens can be moved around, whereas brick pens will be fixed.

It is not recommended to use materials such as straw, bamboo, wood or matting because they can be eaten away by the grasscutters. The pens can be open or closed, whichever the producer prefers. There should be room to move around between the pens.

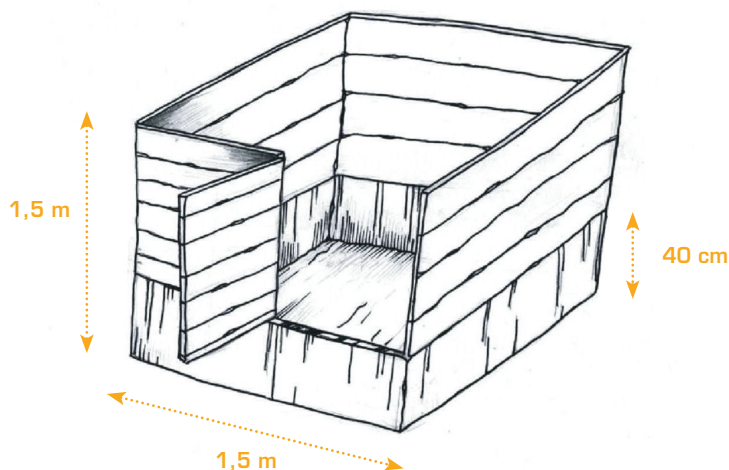


↑ **An open pen**

Open pens are enclosures without any covering on top, and with a surface area of about 3 m² and 1.5 high. There is an opening in the side that gives onto the aisle in order to facilitate easy access for the farmer.

Closed pens are covered by some kind of appropriate roofing material, and may be divided into compartments using partitions. The height of the wall is lower (80 cm) and the surface area can vary between 2 and 3 m².

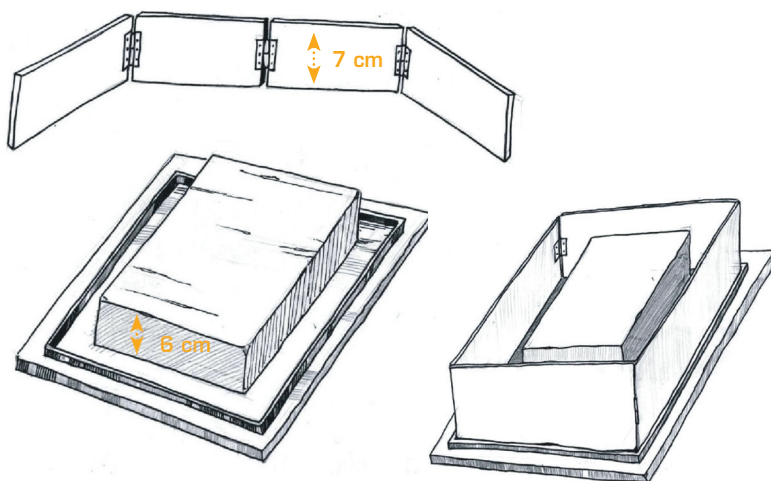
If there are two compartments, they should have the same surface area. The compartments are separated with partitions, with a 15 cm opening to allow the free movement of the animals from one compartment to another. The covering can be made from various materials.



Pens with partitions

The floor inside the building should be smooth and even, while the pens can be plastered or not.

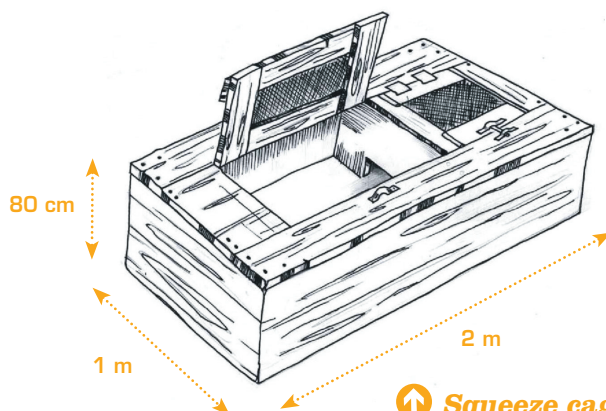
Feeding and drinking troughs can be made of cement or clay, and should be heavy enough so that the grasscutters cannot knock them over. The producer can make the troughs himself. All that is needed is to make a mould out of wood or other scrap material. Calculate one trough per three grasscutters.



↑ *How to make a trough*

The squeeze cage is used to handle the animals more easily. The dimensions of the cage should be almost the same as the animal to be handled. The producer can make it himself, by building a rectangular cage with fine meshed screening. The producer should base the size of the cage on the average weight of the animals in his production, and will also depend on the animal stock chosen (heavy or light variety). The squeeze cage should be built in such a way that the animal cannot turn around inside the cage.

The dimensions of the cage should be almost the same as the animal to be handled.



↑ *Squeeze cage for handling grasscutters*

2

REPRODUCTION

2.1 Basic facts

Sexual maturity:

- **For the male:** 8 months (32 weeks) at a minimum body weight of 2.5 kg;
- **For the female:** 6.5 months (26 weeks) at a minimum body weight of 1.8 kg.

Sex ratio: 1 male for 4 to 10 females.

Ovulation in the female is triggered by the presence of a male.

Gestation period: 5 months (22 weeks) approximately

Number of litters per year: 2 litters

Number of young per litter: 4 young

Suckling period: 40 days (6 weeks) before weaning

2.2 Selection for breeding

Selecting a group of animals for breeding should not be done at random. The farmer can get the best animals from the nearest breeding and multiplication centre, or from another breeder. The selection should be made on the basis of weight. The females should all have around the same weight (avoid weight differences of greater than 500 g); in contrast, the male should be 0.5 to 1 kg heavier than the females. Closely related mating pairs, where the male is related to the females, are also not recommended. The females can, however, be related.

2.3 Mating

The male grasscutter can mate with several females in a single period. The male, who can be identified by his wrinkled, brown genitals, is placed first in the pen so that he can mark his territory and thereby reduce the risk of fights. The female, identified by the closeness of the anus to the genital area, is put in the pen with the male for 24 hours. During the mating session, make sure the male is heavier than the female.

There are generally two options for mating in captivity:

Permanent mating: The male and females remain together in the same pen, and only the young are removed after weaning.

Temporary mating: The female is placed in the same pen as the male at a particular point in time, and removed once pregnant. Each of these options has pros and cons depending on production goals and the degree of organization in the breeding operation.

A comparison of the advantages and disadvantages of the two types of mating

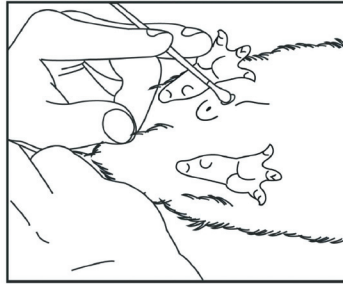
Type of mating	Advantages	Disadvantages
PERMANENT MATING	Increased breeding cycle	<ul style="list-style-type: none">• Difficult to identify the mother of each offspring• Less control over reproduction• Risk of cannibalism• Under-exploitation of the male• Risk of exhausting reproductive females
TEMPORARY MATING	<ul style="list-style-type: none">• Reduced risk of adult male killing offspring• Clear identification of mother and offspring• Excellent management of breeding process	<ul style="list-style-type: none">• Increased investment (several pens needed)• Need for larger space to house females• Reduced number of litters per female and per year

2.4 Gestation

Gestation is around five months. After mating, it is recommended to check that the female is pregnant by using a simple test.

>>> Pregnancy test

Four to eight weeks after mating, take a swab sample from the female's genitals by carefully inserting a cotton bud (for cleaning babies' ears). If the swab does not discolour, then the female is not in gestation. In contrast, if the swab turns reddish brown, then the female is in gestation.



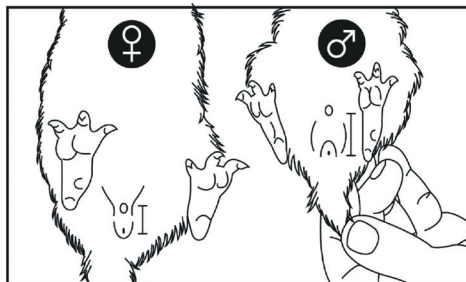
↑ Gestation test

>>> Birth

Newborn grasscutters, even when very small, already resemble fully grown adults. They can move around easily within a few hours. After delivery, special measures should be taken to ensure that the mother gets sufficient, good quality food, and that she gets plenty of water, which is essential for effective milk production.

>>> Weaning grasscutters

Weaning generally takes place 40 days after birth, and should not be extended because the mother will grow weak from prolonged feeding of her young. During weaning, the young males are separated from the females and put together with other males of the same weight. The male can be identified by the distance between the genitals and the anus, which is twice as large as that of the young female.



↑ Identifying the female and male

3

HANDLING GRASSCUTTERS

Handling grasscutters is not easy.

The technique used depends on the size of the animal.

A young, light animal is lifted by the tail by holding at the base of the tail. Then grab its back with the other hand (just behind the front legs and without squeezing too hard). The animal is thereby turned on its back, while holding the tail stretched out at the same time.

A medium-sized animal can also be lifted by the tail, but it is recommended to grab it on the back with the other hand so that there is not too much weight on the tail, especially if the animal is agitated. The animal is then turned on its back in order to calm it down.

A heavy animal should be handled by means of the squeeze cage.

A young animal is lifted by holding at the base of the tail whilst grabbing its back with the other hand.

4

FEEDING

The food supplied should meet all the animal's daily requirements.

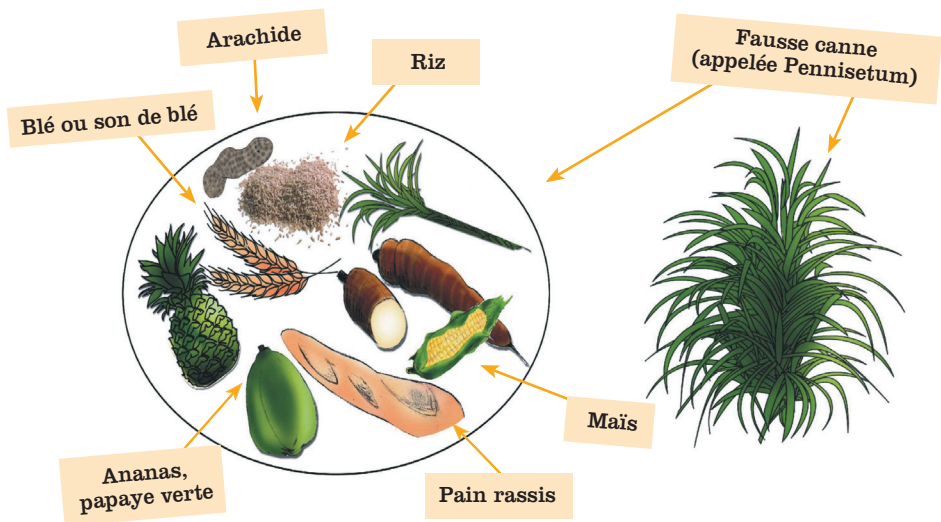
In captivity, grasscutters can eat fresh or dried food, although their diet consists mainly of green forage. It can be supplemented by feed with high energy value, or added protein and minerals.

4.1 Dietary planning

The animals should get a balanced diet each day. A diet based solely on green forage will lead to slow growth and reduced milk production in feeding mothers, thereby increasing the risk of various infections.

At the same time, insufficient forage can lead to digestive problems. It has been calculated that a complete and balanced diet will produce an average weight of 3.5 kg in males and 2.8 kg in females.

Examples of food



Some commonly used forage and concentrates

<i>Type</i>	<i>Name</i>
Annual grasses	Andropogon gayanus, Brachiaria mutica
Perennial grasses	Panicum maximum, Pennisetum purpureum, Tripsacum laxum
Legumes	Leucaena leucocephala, Gliricidia sepium, Stylosanthes guyanensis
Moringa	Moringa oleifera
Agricultural by-products	Garden waste, kitchen leftovers, dried sunflower heads and seeds, or pods from black-eyed peas
By-products from agricultural processing	Dry bread, corn or sorghum bran, groundnut and palm kernel cakes, wheat bran, brewers' dried grain, broken rice or wheat grains
Roots and tubers	Cassava, potato, yam or taro pellets, peels and scraps from cassava or other tubers
Cereal grains	Corn, sorghum, millet, rice
Shells	Powdered oyster, snail or egg shells, with bone meal and cooking salt
Other	Ripe or unripe fruit, cores from the crowns of palm, coconut or pineapple trees or banana plants, the bark of certain trees, green papaya, the trunk of the papaya, bamboo shoots, leaves and tops from pineapples

4.2 Providing food, water and mineral supplements

The animals should have continual access to food.

Fodder should be given two hours before giving concentrates, once or twice a day, preferably in the morning and evening.

Water should always be available.

Grassy fodder should be dried in the sun at least 24 hours before being given. Do not give damp fodder.

Concentrate can be given by themselves or in combination with fodder. It can be made up from just one ingredient or several. If using single-ingredient concentrates, make sure to alternate when you give them. In contrast, if the concentrate is a mix of two or three ingredients, then the same contrite can be given every time. Any changes in concentrates should be made over four to five days in order to allow the digestive system to adapt.

Bones, shells and pieces of wood help to wear down the teeth. After burning, bones can be given in powder form, mixed in with the concentrate, and can provide a source of minerals, especially phosphorus and calcium.

4.3 Conserving and stocking food

>>> Fodder should be dried and then kept in a dry place. If fodder is scarce, then it may be worth considering planting more fodder for this purpose.

>>> Concentrate is perishable and can be sensitive to changes in temperature, humidity, oxidation and subject to attack from mould, bacteria, fungi, insects, mites, rodents, birds, etc. Make sure appropriate measures are taken to ensure the best possible conservation.

5

PRODUCTION PLANNING

Good planning means controlling the maximum number of animals in the shed. This figure should always be uppermost in any production planning, and litters should be calculated and planned throughout the year.

The date of a positive gestation should therefore be recorded, so that the delivery date, around three and a half months later, can be planned in. The number of newborn grasscutters can also be calculated by multiplying the average number per litter by the number of females in gestation.

During weaning, the young males are separated from the young females. Given that a single pen can hold a maximum of 15 young grasscutters, it is possible to predict how many pens will be needed. The breeder should not hesitate to sell surplus animals or to enlarge pens as soon as possible, in order to reduce the risk of overpopulation.

A single pen
can hold a
maximum of
15 young
grasscutters

6

DISEASE MANAGEMENT

6.1 Preventative measures

Daily inspection of the pens will allow early detection of sick animals. Basic hygiene measures and an appropriate diet will also reduce potential losses. Avoid unnecessary noise and handling as this could lead to accidents such as fractures of bones or of the tail.

The key to good hygiene is disinfection, which includes the complete range of actions targeting micro-organisms that cause disease. Disinfection works against parasites as well as diseases.

Wash the equipment (feeding and drinking troughs, etc.) at least once a week, and disinfect the pens and the shed each month. Keep the pen empty in between two occupations, and enforce systematic quarantine for all animals brought in from outside the farm.

Make sure rat poison is always in place around the shed and in the food storage area. Give vitamins, sweetened lemon juice and mineral supplements every two weeks.

Sweetened lemon juice helps strengthen the immune system in grasscutters. It should be given each time the animals undergo stress. To make it, add 55 sugar lumps and two large glasses of pure lemon juice (or 400 ml) to 20 litres of water.

Products to disinfect the buildings

<i>Product</i>	<i>Application</i>
Household soap	Dilute in water
Bleach	10% solution in water (100 ml in 1 l of water)
Disinfectant detergent (for example, Crésyl)	4% solution (40 ml in 1 l of water)
Quicklime	Dilute in water
Bleach + detergent	Dilute in water; using the guidelines for bleach and detergent, respectively.

6.2 Some symptoms of sick grasscutters

The following symptoms may indicate the onset of illness: social withdrawal, inability to escape capture, matted or dull-looking fur, loss of appetite, abnormally long incisors, soft or liquid faeces, coughing, inflammation of a body part, paralysis, etc.

If the symptoms persist, then contact a vet.

Overview of main problems and proposed solutions

<i>Symptoms</i>	<i>Solution</i>	<i>Additional actions</i>
Animal prostrate, not moving much, lethargic	<ul style="list-style-type: none"> • Separate the grasscutter • Do a thorough examination (teeth, abscesses, sores or cuts) • Give sweetened lemon juice. If nothing found, give antibiotics. 	<ul style="list-style-type: none"> • Observe any changes on a regular basis
Dull or matted fur	<ul style="list-style-type: none"> • Check feed quantities and regularity of feeding • Check for dampness and cold • Check the correct mix in the group • Nothing to report if females are ending a period of lactation 	<ul style="list-style-type: none"> • Close any openings • Check the fur during the warmest periods of the day
Newborns partially eaten by the females	<ul style="list-style-type: none"> • Increase feed rations for gestating females (proteins and minerals) • Eradicate any rats or other harmful rodents (traps) 	<ul style="list-style-type: none"> • Pay attention to repeated incidents if it occurs with a female's first litter • Close off any openings with fine mesh
Death of suckling babies	<ul style="list-style-type: none"> • Prevent cold and draughts • Check feeding quantities • Check quantities given to milking females 	<ul style="list-style-type: none"> • Transfer to a closed pen • Sweetened lemon juice • Disinfect the pen
Food not eaten Weight loss	<ul style="list-style-type: none"> • Check feeding quantities • Check teeth for wear • Sweetened lemon juice 	<ul style="list-style-type: none"> • If everything else appears OK, give long-acting antibiotics by injection or in powder form in the drinking water • Disinfect the pen • Deworm
Dead animal	<ul style="list-style-type: none"> • Destroy the carcass • Carefully record any deaths • Disinfect the pen 	

6.3 Veterinary treatment

The breeder should dispose of a small pharmaceutical reserve as part of his basic setup. The basic components are cotton wool, antiseptic products (iodized alcohol and glycerine) antibiotics, anti-inflammatory and deworming drugs. Local plants can also be used, as long as their effects are understood.

Overview of main problems and proposed solutions

Symptoms	Illness and probable cause	Solution	Additional actions
Several dead animals	Illness: Épidemic	<ul style="list-style-type: none"> • Long-acting antibiotics in the drinking water of the whole colony • Incinerate or bury the carcass • Disinfect the farm completely • Check the feed quality 	<ul style="list-style-type: none"> • Seek veterinary advice • Laboratory tests
Several dead animals at the same time and in the same pen	Illness: Suspected disease	<ul style="list-style-type: none"> • Check the feed quality • Transfer the grasscutters to a separate area for quarantine • Long-acting antibiotics for all the grasscutters in the pen 	<ul style="list-style-type: none"> • Disinfect the pen thoroughly • Standard disinfection of the rest of the shed and equipment
Damaged skin, exposed muscle	Illness: Wound	<ul style="list-style-type: none"> • Antiseptic and antibiotic in powder form • Sweetened lemon juice 	<ul style="list-style-type: none"> • Check there are no sharp or jagged points in the pen or cage • Check there are no reasons for fighting (enough food, number of feeding troughs, homogenous group, for example)
Bulging at the base of the tail	Illness: Tail detached during handling	<ul style="list-style-type: none"> • Amputate the tail 	Treat the wound for five days after the amputation with antiseptic, powdered antibiotic used externally and long-acting antibiotic by injection or as a powder in the drinking water. Sweetened lemon juice
Lump under the skin	Illness: Abscess	<ul style="list-style-type: none"> • Puncture the abscess and empty it completely • Put antiseptic under the skin • Powdered antibiotic applied externally • Long-acting antibiotic by injection or as a powder in the drinking water 	<ul style="list-style-type: none"> • Check feed quality • Sweetened lemon juice • Disinfect the pen

Symptoms	Illness and probable cause	Solution	Additional actions
Soft or liquid stools Dirty anus	Illness: Diarrhoea Probable cause: Poor quality feed, sudden change in concentrate	<ul style="list-style-type: none"> • Antibiotic in the drinking water • Reintroduce fibre diet (forage) • Pay attention to feed quality 	Disinfect the pen
Coughing, nasal discharge	Probable cause: Powdery feed, pens constantly damp, draughts	<ul style="list-style-type: none"> • Antibiotics • Check dampness in and around the pen • Check for protection from the cold and draughts • Check the powdery quality of concentrate 	<ul style="list-style-type: none"> • Disinfect the pen • Spread ash on the ground to reduce dampness • Close up any openings in the walls • Filter the concentrate
Animal does not move but appears to be in good health	Illness: Possible fracture Probable cause: Fighting	<ul style="list-style-type: none"> • Check for fractures by moving the limbs • Get rid of the animal 	Avoid panic and handle the animals carefully
Pedalling in the rear legs	Illness: Paralysis	Get rid of the animal	
Female unable to give birth or kills own babies	Illness : Dystocia Probable cause: Unsuitable feeding	Get rid of the animal	Take extra care in feeding gestating females, avoiding fresh cassava towards the end of gestation

7

MONITORING THE FARM

7.1 Recordkeeping

Make a document that records all activities carried out on the farm, including future activities, as well as all daily events. Each animal should have its own file or reference card, and all events that concern it should be noted.

The files or cards should contain the following information (preferably using both sides): **For all animals:** its origin (parentage or source farm), pen number, sex and age.

FRONT

Pen n°: Father:	Animal n°: Mother:	Sex: Source farm:	DOB: Litter:
Date	Illness	Characteristics	Treatment

BACK

For females: Date of mating, number of mating male, date of positive gestation test, date of delivery, litter size at birth and litter size at weaning.

Female N° Origin: Age at first mating:			Pen N° Date of entry: Date of removal: Cause:								
Mating		Date of gestation test	Births					Weaning			Remarks
Date	Male n°		Date	Liging	Dead	Added	Remo-ved	Date	N°	Weight	

For males: date of mating, number of mating female, births resulting, etc.

Male N° Origin: Age at first mating:		Pen N° Date of entry: Date of removal: Cause :		
Mating		Births resulting		Remarks
Date	Female N°	Palpation	Total number born	

A global record is also useful for noting different aspects of all the animals, and allows the farmer to monitor and evaluate how his production is performing.

The farmer will be able to quickly calculate the rates of birth, fertility and mortality between birth and weaning, and assess the breeding potential of the colony, for example.

Pen	Females	Mating		P A	Birth					Weaning			Remarks
		Date	Male		Date	Living	Dead	Added	Removed	Date	Number	Weight	

Global record for animal management

7.2 Infrastructure maintenance

Inspect the shed and pens regularly, and deal with any problems promptly.

8

OTHER INFORMATION

8.1 Financial planning

In rearing grasscutters, income is generated mainly through sales of animals (more than 95 percent) and manure (less than 5 percent). Maximizing profit can only be achieved through reducing costs to the minimum, which comprise paying off debt on the building and equipment, feed, veterinary treatment and transportation.

With a farm of sixteen mature females and four males, it is possible to get 48 grasscutters. Feeding costs will be on average 200 800 FCFA (306 euros), using forage and concentrates based on corn and wheat bran as food sources. If the farm is well managed, then veterinary costs will be minimal, covering only treatment for minor injuries.

The sale of 48 grasscutters at 10 000 FCFA per animal (15 euros) will produce an income of 480 000 FCFA (720 euros).

Given an investment of 600 000 FCFA for the rearing shed, to be paid back over 20 years, the profit in the second year will be 249 200 FCFA (380 euros).

Accounting model for 48 grasscutters (in FCFA)

Description	First year total cost (FCFA)	Second year total cost (FCFA)
Repayment of loan on rearing shed	30 000	30 000
Buying 20 grasscutters (16 females and 4 males)	200 000	
Feed	200 800	200 800
Veterinary costs	negligible	negligible
TOTAL COSTS	430 800	230 800

Income

Description	First year total income (FCFA)	Second year total income (FCFA)
Sale of animals	480 000	480 000
PROFIT	49 200	249 200



8.2 Useful contacts

■ Bureau pour l'échange et la distribution de l'information sur le mini-élevage (B.E.D.I.M)

Faculté universitaire des sciences agronomiques
Passage des Déportés 2; B-5030 Gembloux, Belgium
Email: bedim@fsagx.ac.be
<http://www.bedim.org/>

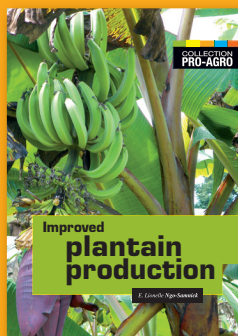
■ Centre SONGHAI

01BP:597 Porto-Novo - Benin
Tel.: +229 20 24 68 81 / +229 20 24 68 81
Fax: +229 20 24 72 50 / +229 20 24 72 50
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Rearing grasscutters

Pro-Agro is a collection of practical, illustrated guides that are jointly published by CTA and ISF Cameroon. They are an ideal source of information for farmers, rural communities and extension workers in tropical and subtropical regions.

This manual is extension material for unconventional animal breeding. It describes how to rear grasscutters, large rodents that are commonly found in the wild in areas of grassland, clearing, wet or marshy areas in Africa. Grasscutters breed prolifically, grow quickly and are easy to rear, thereby making them an ideal alternative to poaching for meat. The manual highlights the agricultural value of grasscutter by-products unfit for human consumption.

- **The Technical Centre for Agricultural and Rural Cooperation (CTA)** is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities. CTA operates under the framework of the Cotonou Agreement and is funded by the EU.

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